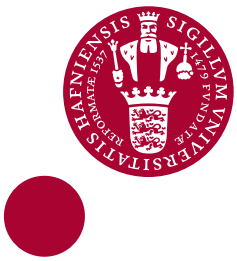

Constituting Public Engagement

Meanings and Genealogies of PEST in Two U.K. Studies

Davies, Sarah Rachael

Published in:
Science Communication

DOI:
10.1177/1075547013478203

Publication date:
2013

Article

Constituting Public Engagement: Meanings and Genealogies of PEST in Two U.K. Studies

Science Communication
35(6) 687–707

DOI: 10.1177/1075547013478203
scx.sagepub.com

Sarah R. Davies[1]

Abstract

This article uses data from two U.K. studies in order to explore the meanings attached to public engagement. It focuses on two issues of importance to contemporary discussions of science communication: the degree to which there has been a smooth transition, in practice, from models of public understanding of science to those of public engagement with science and technology (PEST), and the histories, or genealogies, of such models. Data from two qualitative studies—a case study of one of the United Kingdom's six Beacons for Public Engagement and a study of contract research staff—are used to characterize the ways in which U.K. academic communities understand PEST. It is argued that engagement is construed as *multiple, relational*, and *outcomes oriented*, with seven key outcomes ranging from better research to empowered individuals. These differences are traced to personal and professional backgrounds, suggesting that multiple and overlapping meanings around PEST are derived from particular histories that have been brought together, through the rubric of public engagement, in assemblages such as the Beacons.

Keywords

public engagement, Beacons for Public Engagement, PUS, United Kingdom, research staff

[1]University of Copenhagen, Denmark

Corresponding Author:
Sarah R. Davies, Department of Media, Cognition and Communication, Faculty of Humanities, København Universitet, Njalsgade 80, 2300 KNxbenhavn S, Denmark.
Email: dxq327@hum.ku.dk

Introduction

This article reflects on two issues of importance to contemporary discussions of science communication. The first is the degree to which there has been a "smooth" transition from models of public understanding of science (PUS) to those of public engagement with science and technology (PEST). The second is the histories, or genealogies, of such models, as they are articulated in practice. In closing, the discussion also touches on ways in which narratives of public engagement may be embroiled within narratives of citizenship, nationality, and belonging.

The context for this analysis is, then, the recent rise of PEST within science communication and policy. This has been an international phenomenon. While—as I will discuss—engagement is inflected somewhat differently in different national contexts (Horst & Irwin, 2010; Macnaghten & Guivant, 2011), the terminology of PEST has become important across Europe (Hagendijk & Irwin, 2006; MASIS, 2013), North America (Bonney et al., 2009; McCallie et al., 2009), Australasia (Goven, 2003; Katz, Solomon, Mee, & Lovel, 2009), and the Majority World (Barpujari, 2011; Leach, Scoones, & Wynne, 2005). In all of these locations, PEST has become a feature, at least in terms of nomenclature, of both science communication activities (such as, those organized by museums, universities, or scientific societies) and science policy and decision making (Davies, McCallie, Simonsson, Lehr, & Duensing, 2009). And in many it has arisen as part of a conscious rejection of models of the science-society relationship, which emphasize the public's lack of knowledge and thereby their need for scientific information—models often referred to through the shorthand of "PUS," scientific literacy, or the deficit model (Bauer, Allum, & Miller, 2007; Burchell, Franklin, & Holden, 2009; Gregory & Lock, 2008; McCallie et al., 2009). In the United Kingdom, for instance, a standardized narrative has emerged regarding the development of public engagement over the past decade—what we might call, to pick up on related STS (science and technology studies) language, a dominant view (see Hilgartner, 1990). This narrative will be familiar to readers of *Science Communication*: It tells of the mid-1980s rise of PUS out of scientific concern about negative public opinion and its impact on funding, social science critiques of "cognitive deficit model" assumptions that increasing public knowledge would increase positivity toward science, and a subsequent shift away from "top-down" approaches toward increased interest in participation, dialogue, and engagement (Gregory & Lock, 2008; Irwin & Wynne, 1996; Wilsdon & Willis, 2004). Gregory and Lock (2008) write,

> Ignorant or not, it was argued, the public should have opportunities to engage with the institutions of science in ways that took account of their views; and scientists should have opportunities to engage with the public to listen and learn as well as speak and teach. Where before the science–society issue had been conceptualised as a combative encounter between knowledgeable experts and ignorant lay masses, now, it became a collective exercise of citizenship in a participatory democracy. (p. 1257)

This shift was epitomized in a report from the House of Lords Science and Technology Select Committee, published in 2000 and introducing a new language ("science and society," "dialogue," "engaging the public") for thinking about PUS. The following years have seen a substantial reorientation within policy, practice, and scholarship: While, as Gregory and Lock (2008) note, there were—and continue to be—significant divides between those who study science and society and those who do it, the language of PUS has fallen out of fashion remarkably quickly within science communication and government policy as well as in STS scholarship.

Similar stories can be told around the rise of PEST in other national and cultural contexts (see Bell, 2008; Hagendijk & Irwin, 2006; Katz et al., 2009); the United Kingdom is, however, distinctive in having such a sharply defined narrative and in being widely acknowledged as a forerunner and exemplar in implementing PEST approaches (Tlili & Dawson, 2010). While it is easy to point out the inadequacies of this rather triumphalist "PUS to PEST" tale—see, for instance, Mike Michael's (2002) deconstruction of the many iterations of PUS, Thorpe and Gregory's (2010) assessment of PEST as involving "assumptions and social relations that are embedded within post-Fordist economic transformation" (p. 278), or Brian Wynne's (2006) mapping of protean "deficits"—a number of questions emerge from its dominance within the literature. For instance, we might reflect on the way in which this narrative depicts a smooth transition from the "mistakes" of PUS to a more enlightened, participatory, and increasingly institutionalized focus on engagement. The suggestion is of a straightforward flow from one type of language (and, we are led to believe, practice) to another. Has this been the case? And, if not, what lies beneath the phrase in the many contexts that it is used?

We can, to some extent, speculate on the answer to this. Alan Irwin's (2006) article on the contemporary discourse of scientific governance traced an enduring tension between "old"—PUS-inflected—and "new"—more participatory—models of science and society within U.K. government policies and activities; Bickerstaff, Pidgeon, Lorenzoni, and Jones (2010) have,

more recently, made a similar point with regard to the Royal Society. This dichotomy remains, however, rather stark given that other research has suggested that, once one drills down to the level of the scientists and communication practitioners who carry out much public engagement, there are more meanings at work. We see, for instance, the importance of pleasure and enjoyment, reported motivations ranging from scientific recruitment to mutual learning, and the coexistence of different models of communication (Burchell et al., 2009; Center for Advancement of Informal Science Education, 2012; Davies, 2008; Wilkinson, Bultitude, & Dawson, 2011). Are there ways of understanding the practice and meaning of public engagement that can cope with this multiplicity and that do not force us to distinguish simply between PUS and PEST, old and new, outdated and enlightened?

This question—which focuses on the relative "smoothness" of the PUS to PEST narrative—is the starting point for this research. Based on its status as a global leader in implementing PEST (Bowman & Hodge, 2007; Hagendijk & Irwin, 2006), I focus on public engagement in the UK as a means of exploring the ways in which public engagement is being articulated and understood in practice. Within the British context, I explore the meanings of public engagement in two different academic locations. In the sections that follow, I firstly outline the background and methods of the research, before describing the key ways in which public engagement is understood by some of the university researchers, lecturers, and managers who organize and participate in it. I then trace some of the differences that emerge within meanings of public engagement to the professional histories of those who carry it out. In these sections, then, I problematize the UK's "PUS to PEST" narrative by showing that the creation of public engagement has not been a homogenous move but one that brings together discrete practices and motivations under what happens to be the same banner. I close by reflecting on the ways in which different national contexts may be instrumental in shaping these imaginations and narratives of PEST.

PEST in the United Kingdom: Two Case Studies of Academic Engagement

This research thus takes the development of public engagement itself as an object of study—as a phenomenon that has emerged within a particular time and place (Irwin, 2006). It begins with the question of how public engagement is constituted, within the UK, by those who carry it out. As I will discuss, answering this question leads us to move on to unpicking some of the genealogies, or histories, of different versions of PEST. The results of two

qualitative studies are used to explore these issues. Both of these studies sought to explore the meanings of public engagement for particular groups of academic actors. These actors were, in the first study, participants in one of six "Beacons for Public Engagement" and, in the second, contract research staff (CRS) across the UK. More information on these populations and on the research studies themselves is given below.

The UK's Beacons for Public Engagement Project—which was designed to enable "culture change across the higher education sector" (National Coordinating Centre for Public Engagement [NCCPE] 2013)—was funded in 2008, with £9.2 million from the UK government and the medical research charity the Wellcome Trust. This money established both the NCCPE (located in Bristol) and six Beacons for Public Engagement (spread across the UK and formed through collaborations between universities and community organizations). While different Beacons operated with slightly different foci, activities, and staffing, each of these collaborations essentially sought to support and encourage universities and university staff in developing public engagement activities. Study 1, which was carried out in late 2009, took one of these six Beacons for Public Engagement as a case study site. As part of a longer period of involvement with the Beacon, 11 semistructured interviews were carried out with key actors within it, including the academic and organizational leadership and its Fellows of Public Engagement. The aim here was to start to understand what kind of individuals, organizations, and practices were being drawn together under the rubric of public engagement. Where had they come from? What was their motivation for getting involved in (the organization of) public engagement? Accordingly, interviewees were asked to speak about their backgrounds, as well as the ways in which they understood the notion of public engagement.

The Beacon study was composed of a small team of full-time staff who managed its day-to-day activities (including the organization of seminars and training events and the management of projects funded by the Beacon), alongside academic staff and managers from the organizations that comprised the Beacon and who acted as "theme leaders" or "academic leads." In addition, it incorporated a number of Beacon Fellows, whose research or teaching time had been bought out for a period of some months so that they could focus on carrying out public engagement. The Beacon thus drew together people from across multiple universities and organizations who saw themselves as committed to public engagement in some way. In common with the Beacons Project as a whole, this Beacon sought to create culture change and to enable better university-community engagement (NCCPE, 2013).

Study 2 was carried out in 2010-2011 and focused on CRS: academics—generally working at a postdoctoral level—employed on university research projects on fixed-term contracts (see Oliver & Ackers, 2005). This community is an understudied one in general (Lee et al., 2006), despite working at a level that often involves operationalizing research activities (Shelton et al., 2001). CRS therefore provide a useful contrast to those involved in the Beacons, who have deliberately chosen to prioritize public engagement; while CRS may also be enthusiastic and self-directed in their PEST activities, they tend to have far less freedom in terms of choosing to allocate their time to different research activities (Oliver & Ackers, 2005). This study sought both to reach as many researchers as possible, in order to understand the key ways in which engagement is understood by this community, and to explore some of these understandings in more detail. It therefore incorporates two data sets: one gathered through an online survey tool composed of both closed- and open-ended questions and distributed via the Beacons, the researcher development organization Vitae, and informal networks such as the UK Research Staff Association; and the other gathered through a set of three focus groups (n = 3-8) with research staff, carried out in three different universities across the United Kingdom. These focus groups were recruited with the help of the UK Research Staff Association and included participants from different career stages, disciplines, histories of involvement with PEST, ages, and gender. Here I report on open-ended responses to questions about the nature, desired outcomes, and challenges of public engagement from within the survey (n = 273) and on focus group discussion around the challenges and opportunities of public engagement.

Both studies took a similar analytical approach, based on critical discourse analysis and interpretative coding (Fairclough, 2003). In both studies, the data (interviews, survey responses, and focus group discussion) were transcribed and have been analyzed for emergent themes around the character and purpose of "public engagement." This analysis was carried out using the qualitative data analysis software TAMSAnalyzer, within which text can be coded and emergent themes identified. Data from each of the two studies were analyzed separately, though there was a high degree of overlap in the findings, with the same themes emerging.

Taken together, then, these two studies offer a snapshot into the ways in which different academic communities in the United Kingdom are envisioning PEST. It is important to note, however, that neither study attempted to reach any truly "representative" sample of academic staff; instead, the research focused on searching out the meanings that are in use within particular contexts. The Beacons, for instance, claim different emphases as well as different methods and organizational structures (NCCPE, 2013).

This study of one Beacon will not carry straightforwardly across to others: it may, however, teach us something about the ways in which "public engagement" is being assembled within particular sites. The data discussed, then, are not comprehensive (they do not include the views of lecturers and postgraduate students, among other university populations—and indeed the growing number of professional, non-academic communicators and PEST experts) but should rather be understood as sampling particular populations within U.K. research. While unlikely to be comprehensive, the meanings detected in these samples may well be present more generally within university.

Constituting Engagement

What, then, do these studies tell us about the ways in which PEST is being envisioned by academic communities in the United Kingdom? This section speaks to this question by focusing on data from Study 2 (with occasional reference to Study 1 where it adds to the analysis). While it is clear that "public engagement" is not a homogenous category—with a number of different models and understandings of it mobilized throughout the data, at times by the same individuals—there are three frequently cited features of the way it was discussed by research participants: it was seen as *multiple*, as *relational*, and as *outcomes oriented*. These are discussed below; illustrative quotes are used to give an indication of the much larger data corpus behind each theme.

Public Engagement Is Multiple

It is relatively commonplace in the literature to note that defining public engagement is difficult (see Wilkinson et al., 2011). It is perhaps not surprising, then, that definitional issues were also something that participants found troubling. In Study 2 focus groups, the exact nature of what was under discussion frequently became a focus of conversation. What are the boundaries of public engagement? Does it encompass, for instance, technology transfer or talking to your children's friends' parents about your work? Does social science research with public groups "count" as engagement? Faced with these intricacies, most groups emphasized that public engagement would be different at different times and in different contexts. In the setting of contract research, this was often exemplified by the research project, with its differing stages; the following quote illustrates this, alongside the perceived importance of "the point" of any public engagement process:

> [Type of PE] depends on the stage of the research that you're at; if you're at the beginning you might do different things to what you might do at the end, or you might do things like have a website throughout the whole project, but then you might do particular events or particular things at different stages depending on what the point of the public engagement actually is. . . . (Study 2, Focus Group 2)

This studied emphasis on diversity was also a key feature of the Beacon interviews (Study 1), within which participants were generally careful not to suggest that there might be one type or model of engagement that was superior. Instead, the Beacon was seen as a site for a "mixed economy" of public engagement or, as in the quote below, a place where "different strands" might come together:

> So I think public engagement is a very very broad concept, and different people and different universities interpret it differently there's different strands of it really. (Study 1, Interview 1)

Public Engagement Is Relational

Despite the overwhelming emphasis on the near impossibility of pinning down public engagement to any particular model or method, there were shared themes in the ways participants discussed it. One of these was an emphasis on public engagement as relational: as being about, variously, and not exclusively, building bridges, crossing gaps, creating connections, partnering, enabling mutual benefit, facilitating relationships, or breaking down barriers. While the participants in these relationships varied (but included "science and society," "universities and communities," and "users and researchers"), as did the ways in which relationships were modeled (as education or as participation, to name two important frames; see Davies, 2008), the notion of discrete entities coming together in some new and productive relationship was a constant. The following quotes, from the Study 2 survey, are indicative:

- Making the public feel "connected" with science.
- Breaking down the barriers between the scientists, the media, and the general public.
- Increasing the level [at] which the academic world is open and available to the public on an accessible level.
- Providing open access to public who are interested. (Study 2, survey responses to "What does the term *public engagement* mean to you?")

Engagement, then, is about "connecting," "breaking down barriers," being "open and available," or providing "access." The sense is of new conduits being opened up—new forms of flow and interchange. In this sense the responses are reminiscent of Mike Michael's (2002) assessment of the *continuities* between traditional and critical PUS. All PUS models, he argues, have tended to take for granted "humanism (an emphasis on the pure person), incorporeality (a neglect of embodiment), and *discrete sites* [italics added] (science and the public are presupposed as separate entities)" (p. 357). Similarly, an understanding of public engagement as relationship building takes for granted that there are "gaps" between different sites that require "bridges." More than this, however, we are presented with a particular type of relationship, one that has a tendency to romanticization. Just as the scientists that Burchell et al. (2009) interviewed depicted generally "positive relationships" between science and society occasionally disrupted by malign actors such as the media (2009, pp. 26-34), participants in these studies primarily described engagement as something constructive, rewarding, and consensual rather than, say, combative or grueling (see Thorpe & Gregory, 2010).

Public Engagement Is Outcomes Oriented

Aside from these homogeneities of participant accounts, the diversity and unpindownability of engagement was a key theme—one that was managed through an orientation to the purpose and desired outcome of any public engagement process or event (thus the emphasis, noted in the subsection "Public Engagement Is Multiple," on "what the point of the public engagement actually is"). Rather than overtly referencing particular models of engagement—such as Irwin's (2006) old and new forms of scientific governance—participants in this research tended to view engagement in terms of who or what it was meant to affect, and in what ways.

It is here, then, that the rather smooth picture of "public engagement" presented so far from participant responses—diverse, relational, positive—starts to splinter. At different points within the data, PEST is depicted as affecting different sites in different ways. We thus begin to see evidence of the "tensions" and heterogeneities that other research has emphasized (Bickerstaff et al., 2010; Davies, 2008; Irwin, 2006). Broadly, the sites that engagement is seen as (potentially) influencing are *research, society*, and particular *individuals*. The different kinds of impacts and effects on these sites that participants discussed are outlined below.

First, then, one outcome of public engagement was *helping* or *changing things* through acting on society as a whole. This was often expressed in

terms of "informing public debate"; in addition, however, it could mean working with a local council to put research into practice, "improving the lives" of the general public, or being useful to your local community (for instance by giving them access to university resources). The quote below is particularly explicit with regard to this drive to "make a difference":

> I'm not really interested in "ivory towers" research. I want to do work that actually makes a difference—and making that difference usually requires public engagement at some stage in the process. I do real-world research aimed at saving lives, but it does no good if it is confined to confidential project reports and little-read papers. Public engagement is the thing that gives my work a chance of having a true impact on the lives of other people. (Study 2, survey response to "What does the term *public engagement* mean to you?")

Second, notions of *empowering or equipping* were also cited as outcomes of engagement. Here the emphasis is less on society as a whole than on particular individuals within it, and on their ability to act or take agency within society. The quotes below are indicative: note the rather different ways in which this empowerment can be inflected (as confidence in "approaching scientific subjects" or as the ability to carry out research for oneself):

- I hope to leave the public with a sense of confidence when approaching scientific subjects.
- Increasing the capacity of the public to participate in research including as researchers themselves. (Study 2, survey responses to "What kinds of outcomes do you look for when you carry out public engagement?")

Notions of equipping were often rolled together with the sense that any such empowerment required a particular knowledge base. Third, then, the need to provide information to the general public and, specifically, to *correct misunderstandings* was frequently cited as a desired outcome of engagement. Again, this could be inflected in different ways. Some argued that knowledge of science itself was important (aiming for "better public understanding of my research area"); others suggested that it was important to communicate an understanding of the scientific process, the nature of science as a social enterprise, or the value of research. The extract from one of the focus groups shown below, for instance, emphasizes that the lay public need to understand the importance of funding scientific research:

> Tax payers [pay for science], and some people think science is not important, and they should not spend their money on it, which then we should then inform them that it is important. (Study 2, Focus Group 1)

Fourth, *inspiring or exciting* the public about science or research was also seen as an important aim of engagement. Here the emphasis was less on the knowledge transferred than the effects of that knowledge: Laypeople should become "excited," "interested," or "enthused." Children and young people were a particular focus in this context, with many responses indicating that at least part of the aim of inspiring or exciting audiences about research was to encourage those still at school to consider science as a career:

- Hoping to get young people involved and interested in scientific affairs/careers.
- I'm hoping to inspire people to become interested in science. Especially school kids.
- I aim to bring science to the public and make them enthusiastic about science. (Study 2, survey responses to "What kinds of outcomes do you look for when you carry out public engagement?")

Fifth—and moving toward research itself as a site for the effects of public engagement—participants noted that engagement was also beneficial to them in a number of ways. Many, for instance, talked about the *enjoyment* they got from participating in engagement activities, as well as an increase in their confidence level, the satisfaction of raising awareness of their research, and it being "something for the CV." The speaker below emphasizes the personally "rewarding" and "positive" aspects of engagement:

> I think that maybe it needs to be highlighted how beneficial it is to researchers themselves. I found that part of the project—interviews and television things—they were scary at the time, but when you met somebody who'd seen it and wanted to talk to you about your research [. . .] seeing people engaging in the subject and asking you questions and being interested in something that you've been working on is a very rewarding aspect [. . .] it can make you feel a lot more positive about your research. (Study 2, Focus Group 3)

Sixth, a number of participants emphasized more participatory models of engagement and, accordingly, the notion that public engagement could result in *better research*. Here the emphasis is not just on personal benefits to a

researcher but also on the ways in which laypeople can bring valuable knowledge, perspective, and "groundedness" to the research process. (In addition, some participants stressed that this was a normatively good thing to do—that, given that the general public pay for much of the UK's research, they should have access to and a say in it.) The respondent below, for instance, notes that for him or her, public engagement is a "two-way" process that involves taking into account, and learning from, the concerns of laypeople:

> Public engagement is a two-way process to me. . . . [I]t means engaging with the general public or practitioners, hearing and understanding their concerns and responding to these. This can spark learning and interesting new research ideas. (Study 2, survey response to "What does the term *public engagement* mean to you?")

Finally, the outcomes of public engagement move back around toward society with the sense that it is oriented around user groups, technology transfer, and industry links. Here, then, the argument is that engagement will help in the development of better technologies (both social and technological). The following quotes summarize this perspective:

- Getting industry . . . to see that our research has applications, and can bring a depth of understanding to their problems and projects that they wouldn't get otherwise.
- Knowledge transfer of my research.
- To help professionals act on the findings from my work. (Study 2, survey responses to "What kinds of outcomes do you look for when you carry out public engagement?")

Public engagement, then, is understood in a number of different ways by researchers in the U.K. academy. Depending on whom you ask, it might primarily be understood as school visits aiming to interest students in studying science, policy-oriented public debate, or action research seeking to change communities. While, given respondents' emphasis on diversity, these different models appear to coexist quite happily, it is clear that some profoundly different practices and ideologies are being drawn together under the rubric of "public engagement."

It is thus clear that there has not been a smooth transition to a homogeneous PEST, as the "PUS to PEST" narrative might suggest. Rather than two models having emerged from understandings of engagement, of "old" PUS and "new" participation (Bickerstaff et al., 2010; Irwin, 2006), we

have seen multiple articulations of the nature and purposes of PEST. From where have these different meanings emerged? There are a couple of different 'possibilities: it might be that different meanings of engagement cluster in particular geographical, institutional, or disciplinary hot spots, such that the heterogeneity of engagement is organized by means of more homogeneous nodes or clusters. Alternatively, such ordering might not exist, and any nodes would themselves be hallmarked by diversity. Study 1—the case study of one of the United Kingdom's six Beacons for Public Engagement—enables us to begin to explore this question.

Genealogies of Engagement

Two points are immediately apparent from the interviews carried out at the Beacon. The first is that this site is just as marked by diversity in the accounts given of public engagement as the wider sample of Study 2: though the data comprise just 11 interviews, almost all of the diversities of meaning charted above are present within these (with multiple meanings often appearing in single interviews). This Beacon, at least, is a microcosm of what appears to be the case more generally throughout the UK: different meanings are rolled together under the shared language of public engagement, assembling different actors and activities in—what seem likely to be—new formations and configurations.

The second point is perhaps more intriguing. As interviewees spoke about their interests in and understandings of public engagement, they not only mentioned where these came from, they also actively used them as a frame for the discussion. Public engagement became meaningful to them, in other words, in the context of their disciplinary and personal histories. In fact, there were patterns in the accounts that Beacon people gave of their backgrounds and interests; they told similar kinds of stories, and these stories shaped their portrayal of public engagement in similar kinds of ways. All of these histories ended at the same point: public engagement. We might therefore view engagement as diverse not only in terms of the meanings attached to it but also in the genealogies that bring individuals and organizations to become involved in it. PEST is therefore the meeting point for a range of histories, each of which brings different practices and experiences. Those who participate in public engagement have taken very different routes to it: for instance, one from university outreach and aspiration raising, another from economic regeneration, another from more traditional forms of science communication.

Two examples of the narratives Beacon interviewees told about their interests in public engagement will serve to demonstrate this. Within this data

set as a whole there were several narratives given around the development of engagement; in addition, it seems unlikely that these creation stories are themselves comprehensive—and highly likely that if the interviews were to be repeated at another Beacon, or any other locus of engagement activity, other narratives would emerge. This, then, is not an attempt to chart genealogies of public engagement in any comprehensive way: The point is, instead, their very presence in what turns out to be a not-at-all singular narrative of the rise of public engagement.

First, then, several Beacon interviewees did give an account that corresponded, more or less faithfully, to the "dominant view" of the PUS to PEST narrative discussed in the Introduction. The extract below is an explicit description of developments in this field that also works to situate the speaker within it:

> I regard myself as a professional science communicator [. . .] so I feel like you know I've seen the sort of the development of what started out as public understanding of science, science communication sort of was created in parallel with it as the professional discipline that delivered public understanding of science, and then realised not only was that an incredibly condescending approach, but actually it was wrong, it just didn't work, it wasn't accurately describing what was going on, and then there was the period when it was public engagement with science and technology, dialogue, there's terms like co-inquiry and things coming up now. (Study 1, Interview 10)

The first few lines of this extract, some of which are elided for reasons of space, serve to establish the speaker as an authoritative and experienced actor in the field: a "professional" who has "seen . . . the development" of public engagement. This then gives weight to the history told—one of the development of science communication from something that "delivered public understanding of science" to an age of public engagement, dialogue, and co-inquiry. Here, then, newer methods such as "engagement" or "dialogue" are seen as growing straightforwardly out of PUS in that they respond to the problems of one-way communication. The speaker does not, in this extract, discuss what this engagement is for; elsewhere in the data, however, they map this science communication background on to an interest in engagement as inspiring, entertaining, and exciting people about science.

In contrast, a rather different story is told by another Beacon participant, this time drawing on a background of community development and a personal interest in social justice. Here public engagement and Beacon activities

are understood as part of wider initiatives to support communities and redress inequalities:

> I think because I'm from a youth and community background, I'm a massive advocate for youth and community work and for the people who are involved and I really care about the people involved. So it's not necessarily the process of co-inquiry that I'm really inspired by, but I kind of see it as a vehicle to support and to involve people at a real deep level and to think that it could have policy impact is really exciting [. . .] So I think I came to the Beacon thinking there's opportunities to perhaps actually make a real difference with an organisation such as the university, who have a lot of perceived power. (Study 1, Interview 7)

The speaker's passion is evident ("I really care about the people involved"), seeing engagement (in the form of co-inquiry) as a chance to "support and . . . involve people." Through the Beacon's activities, there is a chance to "make a real difference" and to put universities and communities into new kinds of relationships that will be mutually beneficial but will also make use of universities' high status. The speaker's "youth and community background" (note that both speakers emphasize their *personal* professional history) is therefore used to frame public engagement as a part of community engagement, action for social justice, and advocacy for the relatively powerless. In contrast to the earlier extract, this is not a narrative of the development of a profession so much as an opportunity, through the language of public engagement, to bring about change.

Again, it should be emphasized that these histories—of science communication and community development—are not comprehensive even within this Beacon. But the broader point is perhaps more important than the exact character and number of such histories: public engagement, as it is assembled in practice, is the end point of a number of different genealogies, or to put it another way, the meeting point of several different trajectories. As the extracts above suggest, each of these trajectories carries with it assumptions about purposes, outcomes, and methods—a whole worldview, in fact, regarding the relationship between the academy and the outside world. So for those with interests in economic growth, for instance, businesses will be key public actors with whom to engage, while those who come out of community development might see community groups as the primary point of contact, and individuals with backgrounds in university outreach could assume that schoolchildren are their key audience.[1] Though the language used might be

the same—engagement, co-inquiry, dialogue—and, in this site at least, these different actors, histories and worldviews are able to hang together within the relatively coherent whole of the Beacon, there are profound differences between these understandings of public engagement.

Conclusion

The previous two sections have outlined some of the ways in which PEST is being constituted by those in the U.K. academy. Public engagement in the U.K. cases I have examined can, I have argued, be characterized in terms of multiple and overlapping meanings, each derived from particular histories and entailing different practices and experiences. These arguments have therefore spoken to the question with which this article opened: to what extent has there been a homogeneous transition, within the practice of public engagement, from PUS to PEST? The data I have presented has disrupted the smoothness of accounts of the development of public engagement. It seems likely, in the United Kingdom at least, that not only are there many different understandings and meanings of PEST co-existing simultaneously, but that each of these can also be accounted for through multiple narratives, genealogies, and personal histories.

This, of course, suggests a number of further avenues for research. How are these different variations of PEST held together, in practice, within hubs of engagement activity such as the Beacons? Is it possible to more thoroughly chart or catalogue the genealogies of engagement that actors use to explain the existence of PEST? Are there local differences in the ways that multiplicities of PEST are configured, across the United Kingdom and internationally?

I want to close by reflecting briefly on this last point. This, it seems to me, should be a key focus for future analysis, not least because existing research has suggested that moves to engagement are indeed tied to projects of citizenship and national identity. While there is certainly an international homogeneity around the language of participation and public engagement with science, its meaning in practice seems to be closely tied to particular contexts. As Horst and Irwin (2010) point out, for instance, British discussion of public engagement at the level of political speeches and policy reports has tended to use the "instrumentalist notion that dialogue will facilitate scientific progress" as an ideal that will "unite British society in a progressive vision of the future" (p. 119), while Danish practices of "consensusing" on science and technology are inextricably intertwined with shared understandings of national identity (relating to Denmark as "the land of *folkelig* debate where decisions are taken in common from a

perspective of the common good," p. 115). Such discussion therefore selects some meanings of public engagement over others in order to ally them to notions of citizenship. In the United Kingdom, the 2008 "Vision for Science and society" (Department for Innovation, Universities and Skills, 2008) is a case in point. Ian Pearson, then Minister of State for Science and Innovation, wrote the following in his foreword to the report:

> It should be startlingly obvious that we need to continue efforts to ensure we have a strong future supply of scientists, engineers and technologists. . . . I believe we need a society that is excited by science; values its importance to our social and economic wellbeing; feels confident in its use; and supports a representative well-qualified scientific workforce. . . . "Science and society" used to be an area which was seen solely as a niche part of science communication. Today, we have no choice but to see it as a necessary condition for British—and global—success. (Department for Innovation, Universities and Skills, 2008, p. 4)

Here citizenship is entangled with a particular, correct, attitude to science: Society should be "excited by science" and feel "confident in its use" in order to ensure British economic success. Strikingly, public engagement (as "science and society") is mobilized as an affective technology—a tool to shape souls who love science (Thorpe & Gregory, 2010). Loving science—"feeling" its importance—will lead to a stronger scientific workforce, which in its turn will lead to "social and economic well-being" and British success on the global stage.

The data I have discussed in this article provide us with only limited opportunities to reflect on the extent to which this rather heroic imagination of engagement is replicated—or not—within the largely "small-scale and local" practices in which PEST is operationalized (Turney, 2006, p. 87). Further research could usefully explore in more detail the ways in which particular versions of scientific citizenship are entangled with the multiple understandings of engagement that I have outlined (see Mejlgaard, 2009). However, there are some hints that in the United Kingdom, those who carry out PEST may choose to emphasize smaller scale motivations and rationales for engagement over nation-building ideals. Other than the PUS to PEST story occasionally laid claim to within an individual's account of public engagement, there was little connection, in the on-the-ground accounts of these data, with wider discourses of national or European identity.[2] Indeed, as the extracts in the section "Genealogies of Engagement" suggest, public engagement was almost determinedly viewed in terms of the small-scale, local, and individual. It was primarily construed not as a manifestation of national character but as a somewhat haphazard assemblage of histories,

accidents, and people: I worked with this person here; we got this funding then; I wanted to do that because of my interest in this. The only discernible grand narrative was an almost ubiquitous emphasis on multiplicity and an unwillingness to impose a hierarchy or normative structure upon engagement—the fact that, as participants said, "it doesn't necessarily come with values attached" (Study 1, Interview 1) and that one needs to "respect the fact that there are lots of different ways of engagement" (Study 1, Interview 2). This is, one suspects, in part a tolerance borne of pragmatism. If public engagement is operationalized as a conglomeration of different genealogies, practices, and aims, and if you are located within that conglomeration, intertwined in numerous ways with other actors and histories, then multiplicity is a simple fact of life.

In the context of these data, then, it is somewhat disingenuous to speak of a single meaning for public engagement. Instead there are a thousand tiny origin myths, each tied to different places and people. Is this a specifically U.K. phenomenon or a feature of PEST more generally? And for what purposes—and with what effects—are these localized accounts brought into being? Further research should continue to peel back the surface of PEST—definitions, visions, sound bites—and to highlight the ways in which its flexible and multivalent nature is mobilized within practice.

Acknowledgement

I am grateful to all of those who gave up their time to advise on, participate in, or comment on this research. In particular I'd like to thank Sophie Duncan, Maja Horst, Matthew Kearnes, and Tennie Videler, as well as Science Commincation's reviewers and editor for their comments on earlier versions of this text.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by a Vitae Innovate 2010 grant and by a Public Engagement Fellowship from the Beacons for Public Engagement Initiative.

Notes

1. Of course, to see these backgrounds as frameworks is not to say that there is no flexibility within them. In fact, a number of interviewees presented their activities as responding to, and in contrast with, such histories (e.g., doing engagement

rather than outreach or rejecting the call to "democratization"). The point is that they bring with them an account of these histories that, in their engagement practices, may be claimed, rejected, or altered.

2. One partial exception was in more technology-oriented accounts of engagement, which at times stressed the benefits of technological development and entrepreneurship for the economic well-being of a particular region (rather than for the nation as a whole).

References

Barpujari, I. (2011). Public engagement in emerging technologies: Issues for India. In T. C. Zulsdorf, A. Coenan, A. Ferrari, U. Fiedeler, C. Milburn, & M. Wienroth (Eds.), *Quantum engagements: Social reflections of nanoscience and emerging technologies* (pp. 123-137). Heidelberg, Germany: Akademische Verlagsgesellschaft.

Bauer, M. W., Allum, N., & Miller, S. (2007). What can we learn from 25 years of PUS survey research? Liberating and expanding the agenda. *Public Understanding of Science*, *16*, 79-95.

Bell, L. (2008). Engaging the public in technology policy: A new role for science museums. *Science Communication*, *29*, 386-398.

Bickerstaff, K., Pidgeon, N., Lorenzoni, I., & Jones, M. (2010). Locating scientific citizenship: The institutional contexts and cultures of public engagement. *Science, Technology & Human Values*, *35*, 474-500.

Bonney, R., Ballard, H., Jordan, R., McCallie, E., Phillips, T., Shirk, J., & Wilderman, C. C. (2009). *Public participation in scientific research: Defining the field and assessing its potential for informal science education* (A CAISE inquiry group report). Washington, DC: Center for Advancement of Informal Science Education.

Bowman, D. M., & Hodge, G. A. (2007). Nanotechnology and public interest dialogue: Some international observations. *Bulletin of Science, Technology and Society*, *27*, 118-132.

Burchell, K., Franklin, S., & Holden, K. (2009). *Public culture as professional science: Final report of the ScoPE project (Scientists on public engagement: From communication to deliberation?)*. London, England: London School of Economics.

Center for Advancement of Informal Science Education. (2012). *Public engagement: Informal science education evidence wiki*. Retrieved from http://iseevidencewiki.org/index.php/Public_Engagement

Davies, S., McCallie, E., Simonsson, E., Lehr, J. L., & Duensing, S. (2009). Discussing dialogue: Perspectives on the value of science dialogue events that do not inform policy. *Public Understanding of Science*, *18*, 338-353.

Davies, S. R. (2008). Constructing communication: Talking to scientists about talking to the public. *Science Communication*, *29*, 413-434.

Department for Innovation, Universities and Skills. (2008). A vision for science and society: A consultation on developing a new strategy for the UK. London, England: Department for Innovation, Universities and Skills.

Fairclough, N. (2003). *Analysing discourse: Textual analysis for social research*. London, England: Routledge.

Goven, J. (2003). Deploying the consensus conference in New Zealand: Democracy and de-problematization. *Public Understanding of Science*, 12, 423-440.

Gregory, J., & Lock, S. J. (2008). The evolution of public understanding of science: Public engagement as a tool of science policy in the UK. *Sociology Compass*, *2*, 1252-1265.

Hagendijk, R., & Irwin, A. (2006). Public deliberation and governance: Engaging with science and technology in contemporary Europe. *Minerva*, *44*, 167-184.

Hilgartner, S. (1990). The dominant view of popularization: Conceptual problems, political uses. *Social Studies of Science*, *20*, 519-539.

Horst, M., & Irwin, A. (2010). Nations at ease with radical knowledge: On consensus, consensusing and false consensusness. *Social Studies of Science*, *40*, 105-126.

House of Lords. (2000). *Third report: Science and society*. London, England: The Stationery Office, Parliament.

Irwin, A. (2006). The politics of talk: Coming to terms with the "new" scientific governance. *Social Studies of Science*, *36*, 299-320.

Irwin, A., & Wynne, B. (1996). *Misunderstanding science? The public reconstruction of science and technology*. Cambridge, England: Cambridge University Press.

Katz, E., Solomon, F., Mee, W., & Lovel, R. (2009). Evolving scientific research governance in Australia: A case study of engaging interested publics in nanotechnology research. *Public Understanding of Science*, *18*, 531-545.

Leach, M., Scoones, I., & Wynne, B. (2005). Science, citizenship, and globalisation. In M. Leach, I. Scoones, & B. Wynne (Eds.), *Science and citizens: Globalization and the challenge of engagement* (pp. 3-14). London, England: Zed Books.

Lee, T., Fuller, A., Bishop, D., Felstead, A., Jewson, N., Kakavelakis, K, & Unwin, L. (2006, December). Reconfiguring contract research? Career, work and learning in a changing employment landscape. Paper presented at the SRHE Annual Conference, Brighton, UK. Retrieved from http://eprints.hud.ac.uk/8407/

Macnaghten, P., & Guivant, J. (2011). Converging citizens? Nanotechnology and the political imaginary of public engagement in Brazil and the United Kingdom. *Public Understanding of Science*, *20*, 207-220.

MASIS. 2013. *Masis - Homepage*. MASIS: Monitoring Policy and Research Activity on Science in Society in Europe. Retrieved from http://www.masis.eu/

McCallie, E., Bell, L., Lohwater, T., Falk, J., Lehr, J. L., Lewenstein, B. V., & Wiehre, B. (2009). *Many experts, many audiences: Public engagement with science and*

informal science education (A CAISE inquiry group report). Washington, DC: Center for Advancement of Informal Science Education. Retrieved from http://caise.insci.org/uploads/docs/public_engagement_with_science.pdf

Mejlgaard, N. (2009). The trajectory of scientific citizenship in Denmark: Changing balances between public competence and public participation. *Science and Public Policy*, *36*, 483-496.

Michael, M. (2002). Comprehension, apprehension, prehension: Heterogeneity and the public understanding of science. *Science, Technology & Human Values*, *27*, 357-378.

NCCPE. 2013. Home | National Co-ordinating Centre for Public Engagement. National Co-ordinating Centre for Public Engagement. Retrieved from http://www.publicengagement.ac.uk/

Oliver, L, & Ackers, H. L. (2005). *Fixed term positions in the academic career trajectory*. Leeds, England: University of Leeds.

Shelton, N., Laoire, C. N., Fielding, S., Harvey, D. C., Pelling, M., & Duke-Williams, O. (2001). Working at the coalface: Contract staff, academic initiation and the RAE. *Area*, *33*, 434-439.

Thorpe, C., & Gregory, J. (2010). Producing the post-Fordist public: The political economy of public engagement with science. *Science as Culture*, *19*, 273-301.

Tlili, A., & Dawson, E. (2010). Mediating science and society in the EU and UK: From information-transmission to deliberative democracy? *Minerva*, *48*, 429-461.

Turney, J. (2006). *Engaging science: Thoughts, deeds, analysis and action*. London, England: Wellcome Trust.

Wilkinson, C., Bultitude, K., & Dawson, E. (2011). "Oh yes, robots! People like robots; the robot people should do something": Perspectives and prospects in public engagement with robotics. *Science Communication*, *33*, 367-397. doi:10.1177/1075547010389818

Wilsdon, J., & Willis, R. (2004). *See-through science: Why public engagement needs to move upstream*. London, England: Demos.

Wynne, B. (2006). Public engagement as a means of restoring public trust in science—hitting the notes, but missing the music? *Community Genetics*, *9*, 211-220.

Author Biography

Sarah R. Davies is based in the Department of Media, Cognition and Communication at the University of Copenhagen, where her work focuses on public engagement with science. Her publications include the edited volumes *Science and Its Publics* (2008) and *Understanding Nanoscience and Emerging Technologies* (2010) and articles in journals such as *Science Communication, Science as Culture*, and *Public Understanding of Science*.